

SECTION 109 MEASUREMENT AND PAYMENT

109.01 MEASUREMENT OF QUANTITIES. Work completed under the Contract will be measured using the United States standard measure or the metric system when specified.

Where the standard measure is given in the English system, approximate metric equivalents are shown in parentheses. No guarantee is provided, explicit or implicit, that the units are exact conversions. Work will be accepted on the basis of measures in the Contract. Specified metric tolerances apply to metric Contracts.

The method of measurement and computations used in determining quantities of material furnished and work performed are those methods recognized as conforming to sound engineering practice.

A station, when used as term of measurement, will be 100 linear feet or 100 meters.

Longitudinal and transverse measurements for surface area computations will be made horizontally using the neat plan dimensions. No deductions will be made for individual fixtures having an area of 9 square feet (0.8 m²) or less.

Structures are measured using neat lines shown on the plans or as altered to fit field conditions.

Items that are measured by the linear foot (meter, millimeter), such as pipe culverts, guardrail, underdrains, and the like, are measured parallel to the structure base or foundation.

The average end area method is used for computing excavation volumes.

The term "gage," when used for measuring plates, is the U.S. Standard Gage. Galvanized sheets used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing are specified and measured as sheet thickness in inches (millimeters).

When the term "gage" refers to measuring wire, it is the U.S. Steel Wire Gage.

The term "ton" is the short ton consisting of 2,000 pounds avoirdupois (908 kg).

Measure or proportion weighed materials on certified scales at the designated locations.

Material shipped by rail may be accepted using the car weight provided that only the actual weight of material is paid for. Car weights are not acceptable for material that will be processed in mixing plants.

Obtain tare weights daily on haul vehicles, or as directed. Clearly mark each individual vehicle with a legible identification mark.

Haul materials measured by volume in approved hauling vehicles and measure materials at the point of delivery.

If approved, material specified to be measured by the ton may be weighed and converted to cubic yards (cubic meters). The Project Manager will determine the conversion factors from weight to volume subject to Contractor concurrence before using this method of measurement.

Bituminous materials are measured by the gallon or ton (liter or metric ton). Volumes are measured at 60 °F (15.5 °C) or will be corrected to the volume at 60 °F (15.5 °C) under ASTM D 1250.

Net certified scale weights, based on certified volumes in the case of rail shipments, will be the basis of measurement, corrected for loss of bituminous

material from the car or distributor, wasted, or otherwise not incorporated in the work.

When bituminous materials are shipped by truck or transport, net certified weights or volume, subject to correction for loss or foaming, may be used for computing quantities.

Cement is measured by the short ton (metric ton). A short ton is 2,000 pounds (908 kg).

Timber is measured by the thousand feet board measure (MFBM) (cubic meter) for timber actually incorporated in the structure. Measurement is based on nominal widths and thicknesses and each piece's extreme length.

"Lump sum" payment is complete payment for the work item described in the Contract.

When a complete structure or structural unit (i.e., "lump sum" work) is specified as the unit of measurement, the unit includes all necessary fittings and accessories.

Rented equipment is measured in hours of actual working time and necessary equipment travel time within the project limits. Travel time and transportation to the project is measured for special equipment, ordered by the Project Manager for force account work.

When standard manufactured items are specified, such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gage, unit weight, section dimensions, etc., this identification is the nominal weight or dimension. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

Other quantities are computed in the contract units using established engineering principles, without consideration of local rules or customs.

109.01.1 Weighing Equipment. Furnish accurate weigh equipment for material specified to be proportioned or measured for payment by weight. The weigh equipment must indicate the weight to within the smaller of :

1. Tolerances from correct weight adopted by the Montana Bureau of Weights and Measures; or
2. .05 % of the correct weight.

Use weigh systems tested and certified by the Bureau of Weights and Measures before each use and after each scale set-up or when directed. The Project Manager will accept reports from a Montana certified scale service stating compliance with the applicable tolerances in lieu of State certification. Seal the weigh system after adjustment and testing. Evidence of tampering or scale adjustment is cause to suspend use of the scale until it is re-tested and certified.

All materials received after the last test and certification will be reduced by the percent of error in excess of the specified tolerances if the weigh system is found to overweight (indicate more than the correct weight).

No adjustment is made for systems found to under-weigh (indicate less than the correct weight).

Repair and re-certify weigh systems under-weighing or over-weighing outside the specified accuracy limits before use.

Follow the weigh equipment manufacturers procedures or the National Bureau of Standards Handbook No. 44 procedures for weigh system testing, witnessed by

the Project Manager. Provide all equipment, tools, and labor necessary to perform the test. Test permanent scales at least annually.

The cost of furnishing, testing, operating and maintaining weigh equipment is incidental to and included in the payment for the work.

109.02 SCOPE OF PAYMENT. Receive and accept the specified compensation as full payment for furnishing all materials, performing all work under the Contract in a complete and acceptable manner and for all risk, loss, damage, or expense arising from the work, subject to Subsection 107.21.

If the "Basis of Payment" clause for unit price in the Contract requires that the unit price be full compensation for work or material essential to the item, this same work or material is not measured or paid for under any other pay item in the Contract.

The payment of any current or final estimate or of any retained percentage does not prejudice or affect the Contractor's obligation to submit for final acceptance a completed improvement meeting the Contract specifications.

In accordance with the requirements of Chapter 50, Title 15, MCA, for contracts exceeding \$5,000, including approved modifications, the Department will withhold 1 percent of the dollar amount of all Contractor payments. All payments by a prime contractor to a subcontractor are also subject to this 1 percent gross receipts fee. The prime contractor must withhold 1 percent of all payments made to subcontractors.

109.03 COMPENSATION FOR ALTERED QUANTITIES. Accept payment for work quantities which vary from the Contract quantities at the original contract unit prices. No allowance, except under Subsections 104.02 and 108.10, will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed resulting either directly from such alterations or indirectly from unbalanced allocation among the contract items of overhead expense and subsequent loss of expected reimbursements or from any other cause.

Only those quantities of materials actually incorporated into the final work and accepted will be paid.

109.04 PAYMENT FOR EXTRA WORK. Payment for extra work is made under one of the following:

109.04.1 Unit Price or Lump Sum Basis. Extra work performed under Subsections 104.02 and 104.03 is paid for at the unit price or lump sum price agreed upon and specified in the authorized work order. Extra work is authorized by a change order signed by both parties.

109.04.2 Force Account Basis. Approved extra work paid for on a force account basis must be accounted for daily on report sheets signed by each parties authorized representative. The daily report sheets are the true record of extra work. Extra work on a force account basis ordered by the Engineer in writing, under Section 104, is paid for as follows:

A. Labor. The Contractor is paid the wage rates for all labor and foremen performing the extra work for the total hours worked plus at least 80 percent

of the total. The 80 percent surcharge may be increased if certified documentation is submitted showing that a higher percentage surcharge is needed to cover labor costs. The wage rates used for the above computation includes travel pay, if applicable, but must not include fringe benefits, whether or not paid directly to the employees. Payment as described above is full compensation for all labor related expenses incurred including but not limited to premiums for worker's compensation insurance, public liability and property damage insurance, social security, unemployment compensation, health and welfare expenses, and other expenses imposed by federal or state laws or both.

Submit evidence of the actual wage rates paid.

- B. Materials.** The Contractor will receive the actual delivered cost of all materials used based on invoices, plus 15 percent. The quantity of material used must be documented.
- C. Equipment.** The Contractor will receive the rental rates agreed upon in writing before beginning the work for any machinery or special equipment (other than small tools) used to perform the work. Rental rates are calculated using the current issue of the Departments Equipment Rental Rate Guidelines. Rates and allowances for standby time, outside rented equipment, owner-operated equipment, and moving of equipment is determined under the Equipment Rate Guidelines.
- D. Bond.** The actual cost chargeable to force account work of premiums for the performance bond are paid. No surcharge is allowed for the performance bond. Furnish evidence of the rate paid for the bond.
- E. Miscellaneous.** Accept the compensation provided for under Subsection 109.09.2 as full payment for extra work done.
- F. Statements.** Submit all statements for the extra work done on a force account basis on Department forms. Attach the original extra work order, material invoices and freight bills.

The Inspector will compile and forward to the Project Manager, at the end of each day, a daily record of extra work done on a force account basis, signed by both the Inspector and Contractor's Superintendent.

- G. Subcontracting.** Extra work performed on a force account basis by a subcontractor under a extra work order will include the percentage allowed in Table 109-1 for administrative expenses. This administrative allowance only applies to charges for labor and materials. The allowance is applied to all charges and added percentages specified in paragraphs (A), (B), and (D) above. Bid items in the original contract are not eligible for this administrative allowance.

TABLE 109-1

SUBCONTRACTING - ADMINISTRATIVE ALLOWANCES	
\$0 to \$1,000	10%
\$1,000.01 to \$10,000	\$100 plus 5% of excess over \$1,000
Over \$10,000.01	\$550 plus 3% of excess over \$10,000

Approval of this additional percentage is made after the Contractor furnishes receipted invoices.

Administrative expenses are not paid on a force account basis above the amount allowed the prime and subcontractor if the work is done by a sub subcontractor.

109.04.3 Equitable Adjustment. The equitable adjustment provided for in Subsection 105.16 is determined as follows:

- A. If the parties agree, the price is determined using unit prices or other agreed upon prices.
- B. If the parties cannot agree, the price is determined by the Engineer using unit prices or other means to establish cost.

The following limitations apply:

- A. The rental rates must be actual cost not to exceed the rates established in Subsection 109.04.2 and in effect at the time the work is performed.
- B. No claim for loss of anticipated profits on deleted or uncompleted work or consequential damages of any kind is allowed.

109.05 DELETED OR TERMINATED WORK. The Engineer may delete work by change order under Subsection 104.02.4 or may terminate the contract in whole or part, under Subsection 108.10. When the contract is terminated in part, the partial termination shall be treated as a deletion change order for payment under this Section. Payment for completed items will be at the unit contract prices.

When any item is deleted, in whole or in part, by change order or when the contract is terminated, in whole or in part, payment for deleted or terminated work is made as follows:

- 1. Payment will be made for the actual number of units of work completed at the unit contract prices unless the Engineer determines the unit prices are inappropriate for the work actually performed. When that determination is made, payment for work performed will be as mutually agreed. If the parties cannot agree, the Engineer will determine the amount or the equitable adjustment under Subsection 109.04.3;
- 2. Payment for partially completed lump sum items will be as mutually agreed. If the parties cannot agree, the Engineer will determine the amount of the equitable adjustment under Subsection 109.04.3;
- 3. The Department will pay as part of the equitable adjustment those direct costs necessarily and actually incurred in anticipation of performing the work that has been deleted or terminated. Costs previously paid for by the contract prices for completed units of work are excluded;
- 4. The total payment for any one item in the case of a deletion or partial termination shall not exceed the bid price as modified by approved change orders less the estimated cost (including overhead and profit) to complete the work and less any amount paid to the Contractor for the item;
- 5. The total payment where the contract is terminated will not exceed the total contract price, as modified by approved change orders less those amounts paid before the effective date of termination;

6. No claim for damages of any kind or for loss of anticipated profits on deleted or terminated work will be allowed because of the termination or change order.

Contract time will be adjusted as the parties agree. If the parties cannot agree, the Engineer will determine the equitable adjustment for contract time.

Materials to be permanently incorporated into the work and ordered before the date the work was terminated under Subsection 108.10 or as deleted under Subsection 104.02, will either be purchased by the Department at the actual cost and become Department property, or the Contractor will be reimbursed for the actual cost of returning the materials to the suppliers.

109.06 PARTIAL PAYMENTS. Partial payments will be made once each month based on estimates of the value of the work performed and materials complete in place under the Contract, including materials delivered under Subsection 109.07.

The Department reserves the right to withhold all or part of any partial payments earned under the Contract until all special fuel user's tax payments due or owing to the State of Montana under 15-70-302 MCA or other statutory taxes are paid in full.

The Department will not withhold any retainage on the first 80 percent of the contract awarded amount, if the Contractor does not become delinquent in any contractual obligations and progress is satisfactory.

After 80 percent of the Contract has been completed, 10 percent of each monthly progress estimate will be retained until 5 percent of the final 20 percent of the value of the contract awarded amount is retained.

If the Contractor becomes delinquent in any contractual obligations, the retained amount will be computed at 10 percent of each monthly estimate.

If the Contract extends beyond the Contract completion time, the sum specified in Table 108-1 will be deducted from any money due the Contractor.

109.07 PAYMENT FOR MATERIAL ON HAND. The materials designated in Table 109-2, when produced or delivered and stockpiled at the project site or other approved location near the project site may be considered for partial payment, if the following requirements are met:

1. The material meets the Contract requirements;
2. The material is a manufactured end product or a fully fabricated product. Aggregate must be produced and stockpiled to the final stage for incorporation into the specified mixture or the roadway;
3. Material is stored to prevent damage and theft, without obstructing or impeding the traveling public;
4. A written request accompanied by a delivery receipt for all items received. Include the quantity for which payment is requested and the length of time the material is to be stored;
5. Furnish paid invoices for all stored manufactured or fabricated materials that have not been incorporated into the permanent work within 60 days from the date payment was requested. Include a notarized statement from the supplier or fabricator certifying that their payment has been received. If a paid invoice is not furnished, the quantity of any previously allowed material remaining in storage will be deducted from the next progress

estimate, and further payment will not be made until the material is incorporated into the work.

If stored material is lost, stolen, or damaged, the materials value will be deducted from the subsequent estimate or estimates.

Payment of partial estimates for stored material, acceptance of the materials to be stored, or approval of the storage method does not relieve the Contractor's responsibility for all materials and work upon which payments have been made or the restoration of any damaged work. The payments are not a waiver by the Department of any other Contract provisions or of its rights to require fulfillment of all Contract terms.

Partial payment will be made at the contract unit price for the specified percentage of the quantity produced or delivered and stockpiled as follows:

**TABLE 109-2
MATERIALS IN STORAGE ELIGIBLE FOR PAYMENT**

<u>MATERIAL</u>	<u>PERCENT OF QUANTITY FOR PARTIAL PAYMENT</u>
Aggregate Base and Surfacing	
0-5 Miles Haul 50	
(0-8 km)	
6-9 Miles Haul 60	
(10-15 km)	
10-20 Miles Haul 63	
(16-32 km)	
21 Miles and Greater 65	
(34 km)	
Cover Material & OGFC 50	
Aggregate for Bituminous Mixtures	
0-5 Miles Haul 35	
(0-8 km)	
6-9 Miles Haul 45	
(10-15 km)	
10-19 Miles Haul 48	
(16-31 km)	
20-29 Miles Haul 51	
(32-47 km)	
30-39 Miles Haul 54	
(48-63 km)	
41 Miles and Greater 57	
(66 km)	
Aggregate for Concrete (Bridges) 2	
Aggregate for Concrete (PCCP) 8	
Structural Steel 60	
Reinforcing Steel 50	
Corrugated Metal Pipe 40	
Structural Plate Pipe or Pipe Arch 50	

<u>MATERIAL</u>	<u>PERCENT OF QUANTITY FOR PARTIAL PAYMENT</u>
Concrete Pipe	50
Guardrail (Rail and Hardware)	25
Guardrail (Posts and Blocks)	30
Fencing (Posts and Wire)	30
Precast Concrete Bridge Members (after curing period is completed)	60
Cantilever and Bridge Sign Structures	50
Sign Panels	60
Electrical and Signal Items	50
Steel Sign Posts	35
Wood Sign Posts	35
Posts, Metal U	40
Precast Concrete Products	50
Cattleguards	50
Topsoil	30
Water and Sewer Pipe and Appurtenances	40
Construction Fabric	50
Striping - Preformed Plastic	65
Words and Symbols - Preformed Plastic	75
Thermoplastic Pavement Marking Material	40
Treated Timber	50

Haul is the distance to the nearest mile (km) via the most direct route from the aggregate production plant to the stockpiles for mix production as determined by the Project Manager.

Payment will be made for aggregates which will be stockpiled for at least 60 days or at the Engineer's discretion.

109.08 ACCEPTANCE AND FINAL PAYMENT. When the project is accepted under Subsection 105.15, a final estimate will be prepared. The estimate will include the amount and value of each class of work performed and any extra work and materials. Deductions for all previous payments and amounts to be deducted or retained under the provisions of the contract will be made in the final estimate. Errors made in previous partial payments will be corrected in the final estimate.

The final estimate will be submitted to the Contractor for approval. Once approved, the entire sum due will be paid.

The Department reserves the right to withhold all or part of the final payments earned under the contract until all taxes and assessments due and owing to the State of Montana for any reason have been paid in full unless a written release is received from the Department or the state agency having a claim against the Contractor.

The statutory time for filing claims against the contract bond is 90 calendar days and shall date from the day of final acceptance of the project by the Commission. See 18-2-201 to 18-2-208, MCA.

The Engineer will immediately notify the Contractor and its surety of all claims filed against the contract or bond.

109.09 MOBILIZATION.

109.09.1 General. Mobilization is the preparatory work and operations performed including, but not limited to, those necessary for:

1. The movement of personnel, equipment, supplies, and incidentals to the project site;
2. The establishment of all offices, buildings, and other facilities necessary for work on the project;
3. Premium on contract bonds;
4. Insurance for the Contract;
5. Other work and operations that must be performed or costs incurred before beginning contract work;
6. Mobilization costs for subcontracted work.

109.09.2 Payment. The original contract amount is the total price of the Contract as bid and includes mobilization. Partial payments for mobilization will be made monthly based on the lump sum contract price as follows:

1. One percent of the original contract amount, but not more than 100% of the amount bid for mobilization, will be paid on the first regular estimate period following the award of the Contract;
2. When 5% of the original contract amount is paid under the Contract, 25% of the amount bid for mobilization or 3% of the original contract amount, whichever is less, will be paid;
3. When 10% of the original contract amount is paid under the Contract, 50% of the amount bid for mobilization or 6% of the original contract amount, whichever is less, will be paid;
4. When 25% of the original contract amount is paid under the Contract, 60% of the amount bid for mobilization or 8% of the original contract amount, whichever is less, will be paid;
5. When 50% of the original contract amount is paid under the Contract, 90% of the amount bid for mobilization or 10% of the original contract amount, whichever is less, will be paid;
6. When 70% of the original contract amount is paid under the Contract, 100% of the amount bid for mobilization will be paid.

Nothing in the Contract shall be construed to limit or preclude partial payments provided in the Contract. Payment will be full compensation for all work necessary to complete the item.

109.09.3 Payment (SMP Contracts). An exception to Subsection 109.09.2 is:

For state maintenance stockpile contracts (SMP contracts), mobilization will be paid for based on the percentage each stockpile site quantity bears in relation to the entire contract quantity, determined by the Department. The amount established as payment for mobilization for each site will be paid in its entirety with the first estimate for each site.

109.10 OVERPAYMENTS. Overpayments on progress estimates will be deducted from subsequent progress estimate payments, or the Contractor may be notified of the overpayment. The Contractor will have 60 days from the date of receipt of notification of overpayment to repay the money owed. If the money owed is not received by the Department before the 60-day period expires, interest will be charged on the overpayment beginning with the date of receipt of notification of overpayment. The interest rate charged will be the average Short Term Investment Pool (STIP) rate, determined by the Montana State Board of Investments, for the period in which the overpayment is not repaid.